

U.S. Serial Number: 10/773,789
Reply to Office Action of: April 11, 2006
Family Number: P2003J011-US2 (PEP-0404)

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Page 9 of 16

REMARKS

A Declaration under 37 C.F.R. §1.132 by Dennis Peiffer, one of the Applicants, is submitted with this Amendment.

Claims 31 – 35 are canceled without prejudice, in compliance with the Examiner's restriction requirement. Applicants reserve the right to submit the subject matter of claims 31 – 35 in a divisional application.

Claims 1 and 10 are amended to require that the feed mixture comprises from about 70 to about 98 percent by weight acid. Support for this amendment can be found, for example, in claim 3 as originally filed. Claims 1 and 10 are also amended to require a first permeate product containing a greater concentration of acid than the feed mixture. Support for this amendment can be found, for example, in paragraphs 0017 and 0038 - 0042, Tables 1 – 3, and Example 1 of the specification as originally filed.

Claims 5, 6, 7, and 19 – 24 are amended for consistency with claims 1 and 10.

Claims 1, 9, and 10 are amended to maintain consistent use of the term "feed mixture." Claim 14 is amended for clarity.

Claim 3 is canceled.

New claims 36 - 41 are added. Support for new claims 36 – 41 can be found, for example, in paragraph 0027 – 0029 of the specification and the claims as originally filed. Support for new claim 20 can be found, for example, in paragraph 0017, Tables 1 – 3, Example 1 of the specification and claims 1 – 9 as originally filed.

U.S. Serial Number: 10/773,789
Reply to Office Action of: April 11, 2006
Family Number: P2003J011-US2 (PEP-0404)

Page 10 of 16

The above amendments introduce no new matter.

Reconsideration of this application is requested. The claims submitted for reconsideration are claims are 1, 2, 4 – 30, and 36 - 41.

I. Election/Restriction

Applicants confirm the election of claims 1 – 30 for further prosecution.

II. Information Disclosure Statement

The Office Action notes that the Information Disclosure Statement filed on May 16, 2005 contained 3 references in a language other than English. Applicants understanding of the relevance of these documents is that these references were cited in the International Search Report for the PCT counterpart of this application as providing background about the general state of the art. Reference AH from the May 16, 2005 search report (EP 0652044) is believed to be a member of the same patent family as US 5,565,102. An English abstract is provided in an accompanying IDS for references AI (DE 3812183) and AL (FR 2687656).

III. Provisional Obviousness Type Double Patenting

Applicants note the presence of the Provisional Obviousness Type Double Patenting rejection of claims 1 – 9 over claims from co-pending Application Serial No. 10/947,019. Applicants represent that any necessary terminal disclaimer in conformance with 3.73(b) will be filed after all other outstanding rejections have been removed.

U.S. Serial Number: 10/773,789
Reply to Office Action of: April 11, 2006
Family Number: P2003J011-US2 (PEP-0404)

Page 11 of 16

IV. Rejections under 35 U.S.C. §102 and §103

Permeate Product

Claims 1 and 10, as well as the corresponding dependent claims, are amended to recite a permeate product. A permeate product refers to a quantity of substance that has already passed through a membrane, and optionally one or more substances that were already present on the permeate side of the membrane that can mix with the substance that has passed through the membrane. A perstraction solvent is an example of a substance already present on the permeate side of a membrane that can mix with the substance that has passed through the membrane. If no other substance is present on the permeate side of the membrane, the permeate product will comprise only the substance that has passed through the membrane. Practitioners in the art commonly use the term "permeate" to refer to both a) a substance that is passing through a membrane, and b) a quantity of substance that has passed through a membrane. This amendment clarifies Applicants intended definition. Support for this amendment can be found, for example, in paragraphs 0017 and 0038 – 0042.

Rejections over U.S. 2,276,210 (Lane)

The rejection of claims 1 and 4 – 9 under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent 2,276,210 (Lane) is respectfully traversed. Lane does not describe or suggest forming a first permeate product having a greater concentration of acid than the feed mixture.

Lane teaches a method to dialyze contaminated acids using a semi-permeable membrane. The method of Lane is based on diffusion of acid from a contaminated side of a membrane to a side with lower contamination. As a result, Lane requires the use of a dilute aqueous acid (or water) on the permeate side of the membrane.

U.S. Serial Number: 10/773,789
Reply to Office Action of: April 11, 2006
Family Number: P2003J011-US2 (PEP-0404)

Page 12 of 16

As noted in Lane, "Since it is desired to separate the acid from the impurities contained therein, the uncontaminated acid solution used as the liquid into which the diffusion of the acid from the contaminated solution occurs, must necessarily be of a concentration which is lower than that of the acid treated." (Page 2, col. 2, lines 3 – 9) Thus, as Lane explicitly teaches, the concentration of acid in the permeate product will be lower than the concentration of acid in the acid feed.

Claim 1 as amended requires forming a first permeate product having a greater concentration of acid than the feed mixture. Lane explicitly teaches forming a first permeate product with a lower concentration of acid than the feed. Thus, claim 1 is allowable for at least this reason. Claims 4 – 9 are dependent from claim 1, and thus are also allowable. Reconsideration and withdrawal of the rejection are requested.

Rejections over U.S. 6,183,648 (Kozak)

The rejection of claims 1, 2, 8, 10, 16, 17, 27, 29, and 30 under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent 6,183,648 (Kozak) is respectfully traversed. The rejection of claims 19 – 21 under 35 U.S.C. §103(a) as being unpatentable over Kozak is also respectfully traversed. Kozak does not describe or suggest processing a feed mixture that comprises from about 70 to about 98 percent by weight acid using a first polymeric membrane.

Kozak teaches the use of a hydrophilic crosslinked ionic polymer material membrane for nanofiltration of a feed. The feed used in Kozak represents a relatively dilute acid. The maximum acid concentration disclosed in Kozak as being used for a feed is 18.8% by weight. (See Table 2, batch 28) The fact that Kozak is directed to relatively low acid concentrations is confirmed at Co. 7, lines 55 – 61, where Kozak describes the selection of a membrane. Kozak states that the pH of an aqueous solution is one of the most critical parameters for

U.S. Serial Number: 10/773,789
Reply to Office Action of: April 11, 2006
Family Number: P2003J011-US2 (PEP-0404)

Page 13 of 16

determining the type of membrane used for nanofiltration. The pH scale is a useful scale for relatively dilute aqueous solutions, but not highly concentrated acid mixtures. By contrast, claims 1 and 10 as amended require processing a feed mixture that comprises from about 70 to about 98 percent by weight acid using a first polymeric membrane.

In addition to not describing or suggesting the processing of highly concentrated acid mixtures, the membranes described in Kozak are not compatible with processing of highly concentrated acid mixtures. The Office Action notes U.S. Patents 4,767,645 and 4,833,014 (the Linder patents) as describing membranes compatible for use with highly concentrated acid feeds. Applicants respectfully submit that the membranes described in the Linder patents are not suitable for processing of highly concentrated acid feeds. Instead, highly concentrated acid feeds would quickly degrade membranes made according to the Linder patents. Although the membranes described in Kozak and/or Linder may have some starting materials in common with membranes of the claimed invention, the method for forming a membrane described by Applicants is distinct from the methods described in Kozak and/or Linder for forming a membrane. As a result, it cannot be inferred by the mere similarity of materials that the membranes in Kozak will have the same properties as membranes described by applicants in the specification. A Declaration by Dennis Pciffer (one of the Applicants) accompanies this Amendment. The Declaration attests to the lack of compatibility of the membranes from the Linder patents for use in a highly concentrated acid environment.

As Kozak does not describe processing a feed mixture that comprises from about 70 to about 98 percent by weight acid using a first polymeric membrane, claims 1 and 10 are allowable for at least this reason. Because the membranes in Kozak are not compatible for use in processing a feed mixture that comprises from about 70 to about 98 percent by weight acid, claims 1 and 10 are allowable for at least this

U.S. Serial Number: 10/773,789
Reply to Office Action of: April 11, 2006
Family Number: P2003J011-US2 (PEP-0404)

Page 14 of 16

additional reason. Claims 2, 8, 16, 17, 19 – 21, 27, 29, and 30 are all dependent from claim 1 or 10, and thus are also allowable. Reconsideration and withdrawal of the rejection are respectfully requested.

Rejections over Kozak in view of Lane

The rejection of claims 14, 15, 18, and 28 under 35 U.S.C. §103(a) as being unpatentable over Kozak in view of Lane is respectfully traversed. Neither Kozak nor Lane, either alone or in combination, describe or suggest all of the elements of the claimed invention in claims 1 and 10 and the corresponding dependent claims.

Kozak cannot be operably combined with Lane to arrive at the claimed invention, because the membranes described in Kozak are not compatible for use in processing a feed mixture that comprises from about 70 to about 98 percent by weight of acid. The Office Action asserts that Lane teaches the use of highly concentrated acid mixtures. The Office Action then asserts that the membranes described in Kozak, such as the membranes described in the Linder patents, can be used for processing of highly concentrated acid mixtures, and therefore Lane can be combined with Kozak to arrive at the claimed invention. However, as stated in the Declaration by Dennis Peiffer and as shown above, the membranes in Kozak and/or the Linder patents are not compatible for use in the processing of a feed mixture that comprises from about 70 to about 98 percent by weight of acid. Any attempt to use the membranes of Kozak to arrive at the claimed invention will not work, as the membranes will degrade in the presence of the acid concentrations required by the claimed invention. Any potential motivation in Lane to try such acid concentrations cannot cure this defect. As a result, Kozak and Lane cannot be operably combined to arrive at the claimed invention, as the membranes in Kozak are not compatible for use in the processing of a feed mixture that comprises about 70 to about 98 percent by weight of acid. For at least this reason, claims 1, 10, and any dependent claims (including 14, 15, 18, and 28) are

U.S. Serial Number: 10/773,789
Reply to Office Action of: April 11, 2006
Family Number: P2003J011-US2 (PEP-0404)

Page 15 of 16

allowable over Kozak in view of Lane. Reconsideration and withdrawal of the rejection are respectfully requested.

Rejections over Kozak in view of U.S. 3,963,567 (Cole)

The rejection of claims 11 – 13 and 22 - 26 under 35 U.S.C. §103(a) as being unpatentable over Kozak in view of U.S. Patent 3,963,567 (Cole) is respectfully traversed. Neither Kozak nor Cole, either alone or in combination, describe or suggest all of the elements of the claimed invention in claims 1 and 10 and the corresponding dependent claims.

As noted above, Kozak does not describe or suggest processing a feed mixture that comprises from about 70 to about 98 percent by weight acid using a first polymeric membrane. Cole is directed to electrodialysis of seawater. All of the solutions described in Cole are aqueous solutions similar in composition to seawater. As a result, Cole also has no description or suggestion of processing a feed mixture that comprises from about 70 to about 98 percent by weight acid using a first polymeric membrane. For at least this reason, claims 1, 10, and any dependent claims (including 11 – 13 and 22 – 26) are allowable. Reconsideration and withdrawal of the rejection are respectfully requested.

V. Conclusion

Having demonstrated that all rejections of claims have been overcome, this application is in condition for allowance. Accordingly, applicants request early and favorable reconsideration in the form of a Notice of Allowance.

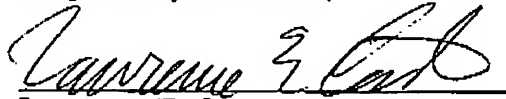
If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated, since this should expedite the prosecution of the application for all concerned.

U.S. Serial Number: 10/773,789
Reply to Office Action of: April 11, 2006
Family Number: P2003J011-US2 (PEP-0404)

Page 16 of 16

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response. Please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1330.

Respectfully submitted,



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☒ Pursuant to 37 CFR 1.34(a)

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